

ORIGINAL

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PROPERTY SURVEY SUMMARY SHEET (Continued)
TRIUMPH EXPLOSIVES INCORPORATED
FUDS PROPERTY NUMBER C03MD1012

- 180 acres fee on 31 January 1940 (Deed Book W.E.B. 16/Page 20);
- 80.98 acres fee (originally 108.48 acres fee referred to as the "Bradley Farm" less approximately 27.5 acres fee conveyed unto National Magnesium Corporation of Maryland by Triumph on 23 April 1942 by Deed Book W.E.B. 25/Page 54) on 18 June 1940 (Deed Book W.E.B. 16/Page 393);
- 55.8 acres fee on 18 July 1941 (Deed Book W.E.B. 20/Page 538) - this parcel was referred to as part of Tract No. 1 on a Plat of the Zeitler Stock and Dairy Farm dated 22 June 1942 [Plat Book SRA No. 1A, Page 182];
- 168.8 acres fee on 29 June 1942 (Deed Book W.E.B. 25/Page 266) - this parcel was referred to as part of Tract No. 1 on a Plat of the Zeitler Stock and Dairy Farm dated 22 June 1942 [Plat Book SRA No. 1A, Page 182] - total acreage is 224.6 acres less 55.8 acres;
- 328.4 acres fee on 5 August 1942 (Deed Book W.E.B. 25/Page 345) - this parcel was referred to as part of Tract No. 3 on a Plat of the Zeitler Stock and Dairy Farm dated 22 June 1942 [Plat Book SRA No. 1A, Page 182];
- 60.72 acres fee on 5 August 1942 (Deed Book W.E.B. 25/Page 348) - this parcel was referred to as part of Tract No. 2 on a Plat of the Zeitler Stock and Dairy Farm dated 22 June 1942 [Plat Book SRA No. 1A, Page 182].

As of August 1941, the United States had no property interest in either the Army side or Navy side, or in the Carpenters Point property. TEI and the Navy entered into "Emergency Plant Facilities or Supplies" contracts in 1941 and 1942. These contracts called for the construction of numerous buildings and structures to be paid for and owned by the Navy and located on land owned by TEI. The work called for under the Navy contracts included:

- Pelleting and loading TNT;
- manufacturing (blending) incendiary/flare mixtures and tracer mixtures;
- manufacturing sodium and lead azide;
- manufacturing fuzes and primers for grenades and 20mm/40mm anti-aircraft ammunition;
- production (assembly) of 81mm, 40mm, and 20mm fixed anti-aircraft ammunition.

Emergency Plant Facilities or Supply Contract No. NOD-2002 dated 14 August 1941 (recorded 14 February 1942): Under the terms of this contract, the Navy was to provide funds for the construction of 250 buildings. The buildings were to be "located on, or attached to, or used in connection with" 235.8 acres fee of TEI-owned land. The acreage was listed as two separate parcels owned by TEI: one parcel totaling 180 acres fee (Deed Book W.E.B. 16/Page 20), plus a second parcel totaling 55.8 acres of land (Deed Book W.E.B. 20/Page 538), both on the Navy or west side of Blue Ball Road. TEI was to construct the buildings, but title to the buildings was to remain with the Navy. The buildings were to be used in the production/manufacture of ordnance materials for the Navy. TEI could not sell the land on which the facilities were constructed until a settlement with the U.S. had been reached (i.e., either TEI purchased the buildings or the buildings were sold and removed). The U.S. had an option to purchase the land described in the contract if the contractor did not purchase or lease the facilities.

Emergency Plant Facilities or Supply Contract No. NOrd(F)1087 dated 21 April 1942 (recorded 7 January 1943): Under the terms of this contract, the Navy was to provide funds for the construction of 177 additional buildings on TEI-

Table 28
Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding **Media Rating** box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)					
Surface Water/Human Endpoint (Table 22)					
Sediment/Human Endpoint (Table 23)					
Surface Water/Ecological Endpoint (Table 24)					
Sediment/Ecological Endpoint (Table 25)					
Surface Soil (Table 26)					

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING**HHE Ratings (for reference only)**

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	
HML	D
MMM	
HLL	E
MML	
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating		Priority	CHE Rating		Priority	HHE Rating		Priority
			A		1			
A		2	B		2	A		2
B		3	C		3	B		3
C		4	D		4	C		4
D		5	E		5	D		5
E		6	F		6	E		6
F		7	G		7	F		7
G		8				G		8
Evaluation Pending			Evaluation Pending			Evaluation Pending		
No Longer Required			No Longer Required			No Longer Required		
No Known or Suspected Explosive Hazard			No Known or Suspected CWM Hazard			No Known or Suspected MC Hazard		
MRS or ALTERNATIVE PRIORITY						4		

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TRUIMPH EXPLOSIVES INCORPORATED
FUDS PROJECT NUMBER C03MD101202

By order dated 11 July 1979, the Secretary of Health and Mental Hygiene for the State of Maryland requested that Martin Herron, owner of a property located on Zeitler Road in Elkton do the following:

- Cease the storage, dumping, or burning of all wastes on the farm;
- Submit to the Department of Health and Mental Hygiene a plan showing the extent of the filled areas, types of waste present, and a plan to dispose of the wastes.

An unsigned letter dated 7 August 1979 and believed to be authored by the Heron family (specifically Martin Herron) responded to the order. The response quantifies one of the waste items as "approximately 6 cubic yards of 40 mm projectile parts that were burned with magnesium, left here by the U.S. Government after World War II, around 1943." The letter goes on to state that "we expect to pick out the steel and haul the ash to the Cecil County Landfill." The Herron Farm encompasses approximately 400 acres, and according to real estate searches, includes most of a 328.4-acre parcel that was previously part of the "Zeitler Stock and Dairy Farm" (located to the north of the original TEI plant on the west/Navy side of Blue Ball Road). This parcel was purchased by Triumph in 1942 and sold to Argus F. Robinson and Laura S. Robinson in 1946. Based on a review of available historic information, no improvements were constructed by TEI on this property. This parcel was subsequently sold off and most of it was acquired by Martin Herron, who transferred the property to a partnership known as MARVA Limited Partnership.

In 2001, Maryland Department of the Environment (MDE) identified a suspect disposal area located on the 400-acre farm owned by Herron/MARVA Limited Partnership. The disposal area was estimated by MDE to be between 35-55 acres and it is located on the western part of the 400-acre farm along Zeitler Road and extending south. MDE reported that this area, which they referred to as the "firehole," was used for waste disposal by TEI. MDE has conducted investigations of this area, and these investigations are discussed below. Real estate records indicate that the area identified by MDE as the "firehole" was part of the acreage owned by TEI between early 1942 and 1946 and it was on the northern part of the original area known as the "Zeitler Stock and Dairy Farm". Three references were found pertaining to the existence of a "firehole or "fire hole." TEI company newsletters refer to a disposal area away from operations as the "fire hole" (TEI newsletter from July 1943) and the "firehole" (TEI newsletter from August 1944). Although no location was given in the 1943 newsletter, the 1944 newsletter lists the site as being 2 miles from the plant. Pictures in the newsletter show a road with telephone poles in the background - possibly Zeitler Road. The newsletters mention that the area was used to dispose/burn TNT, powder, and other wastes from ordnance manufacturing operations. In addition, a 1939 lease filed at the Cecil County Courthouse between E. May Murray (lessor) and TEI (lessee) mentions a "fire hole" on land owned by the lessor and known as "Mullin Farm." The farm was reportedly located along the road from Elkton to Childs, Maryland (which should be Blue Ball Road); however, without further particulars, it cannot even be determined whether the Mullin Farm was on the

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east side or west side of the road, so the location of this fire hole is unknown. The potential exists that there was more than one fire hole located at the FUDS.

Based on a review of a November 1942 aerial photograph (which represents conditions during the Executive Order period), no evidence of fireholes, structures, or manufacturing operations were observed on the northern part of the 328.4-acre parcel which was part of the "Zeitler Stock and Dairy Farm." It is further noted that the 328.4-acre area was not part of the 585.81 acres covered by the Navy-financed improvements under Contract Nos. NOD-2002 and NORD(F)1087 that were in effect from 1941/1942 until 1946.

MDE has conducted numerous investigations on the Elkton Farm site. The farm which is owned by Marva Limited consists of 400 acres, which includes acreage which was part of the former TEI Elkton facilities. The focus of the investigations by MDE included the former "firehole" (referred to by MDE as Unit Two), the former Thiokol Motor Recovery Area (TMRA) (referred to by MDE as Unit Three), and a 55-acre parcel to the east of the firehole and north of the G.E. Railcar property (referred to by MDE as Unit Four). MDE identified the main part of the former Elkton Farm as "Unit One" (site MD-433) which is located south of the firehole/TMRA. MDE reported that this area included farm buildings which had contained 53 drums of waste from a solvent recycler. A CERCLA removal action which included the removal of drums and 10 tons of contaminated soil was reportedly completed on Unit One in 1992. The following paragraphs discuss MDE's findings with regard to Units 2 through 4.

Between 2001 and 2004, MDE conducted Preliminary Assessments (PA) and Site Inspections (SI) of the "firehole" (Unit 2) and the TMRA area (Unit 3). These investigations included a review of available information, geophysical survey and sampling of soil, groundwater, sediment, and surface water. Historical information indicated that munitions waste was placed in several pits and burned. MDE reported that representatives of the current owner stated that tons of soil had been removed from the firehole area and fresh soil brought in to help crops grow. The geophysical survey identified a series of distinct anomalies that were believed to be burn pits in these areas. Sampling was conducted and a toxicological evaluation was performed with the data. MDE assumed a residential future use scenario for these areas. MDE reported that risk estimates for surface and subsurface soils in these areas exceeded EPA and MDE recommended levels. For Unit 2 (firehole) and Unit 3 (TMRA), MDE concluded that further investigation was necessary due to the presence of TNT and daughter products, metals, and trichloroethene (TCE), as well as the presence of ordnance-related debris observable on the ground surface.

In 2002/2003, MDE conducted an SI of the 55-acre area to the east of the firehole and TMRA (Unit 4). MDE conducted soil, groundwater, sediment, and surface water sampling in this area. A toxicological evaluation was conducted by MDE assuming a residential future use scenario for the site. MDE reported that risk estimates for groundwater performed for this area exceeded EPA and MDE recommended levels. MDE concluded that the results indicate an impact to groundwater in the vicinity of Unit 4. MDE recommended

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groundwater treatment or public water supply if the area was developed. MDE further concluded that the results of the sample program do not indicate any undue influences from past munitions manufacturing or disposal practices of TEI or by other related companies.

On 28 May 2004, a site visit was conducted by MDE, USACE and EA to the location of the "firehole." During the site visit of the "firehole," unmarked suspect nose fuzes, base fuzes, flares and other potential military munitions (MM) and munitions and explosives of concern (MEC) were observed. No markings were found on the material observed to indicate who the ordnance was manufactured for (i.e., for the U.S. or for a foreign government). The presence of suspect MM and MEC at the site represents a potential hazard. As previously stated, no evidence of ordnance (MM or MEC) was observed during the site visit to the Carpenters Point portion of the FUDS. However, the potential presence of suspect MM/MEC at the site represents a potential hazard.

In a letter dated 4 August 2005, EPA accepted the results of the MDE PA/SI for units 2 and 3. EPA separated these units from the main Elkton Farm site (MD-433) and indicated that they are now listed in the CERCLIS database under the title of The Elkton Farm Firehole (MD-533). EPA concurred that the site should be the subject of additional investigations. EPA indicated that a removal action would be planned/conducted by EPA at the site.

PROJECT ELIGIBILITY: MM/MEC was observed onsite at the potential location of the former "firehole" associated with the Elkton plant. The presence of MM/MEC at the firehole represents a potential hazard. These MM/MEC hazards are associated with TEI's operations at the site, some of which took place during the Executive Order period. DOD may bear potential CERCLA liability for these hazards, along with other parties.

POLICY CONSIDERATIONS: There are no policy considerations under DERP-FUDS that prohibit the proposal of a PRP/MMRP project at this site. Regarding GOCO considerations, Honeywell is believed to be TEI's corporate successor, and Honeywell is a viable corporation. Members of the Herron family, who make up Marva Limited Partnership, the current owner, are also PRPs.

PROPOSED ACTIVITIES: A PRP/MMRP project is recommended to assess potential contribution by others in conjunction with potential DOD responsibility for the known and potential MM/MEC contamination at the site. The proposed PRP/MMRP project will expand on the existing site history and identify responsible parties and their relation to the reported MM/MEC contamination associated with TEI's operations, as well as subsequent/current owners' operations. Negotiations will be undertaken with other PRPs to come to agreement on respective liability; or failing that, DOD's interests will be represented during litigation.

PROJECT POINT OF CONTACT: Jack Butler, CENAB-PP-E, (410) 962-4937.

LEAD REGULATOR: John Fairbank, Maryland Department of the Environment (MDE), (410) 537-3475.

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PROPERTY SURVEY SUMMARY SHEET
TRIUMPH EXPLOSIVES, INCORPORATED
FUDS PROPERTY NUMBER C03MD1012
FFID # MD9799F1442
ADDENDED 18 AUGUST 2006

PROPERTY NAME: The eligible property consists of two noncontiguous areas that currently have multiple owners and multiple site names. Portions of the site are generally identified as the Triumph Industrial Park, Cecil Industrial Park, Elkton Firehole and Morton Thiokol Inc. The property was formerly known as Triumph Fireworks and Fusee Company, Triumph Industries, Incorporated, and the Elk Mills Loading Corporation, and included an area known as Zeitler Farm.

LOCATION: Elkton, Cecil County, Maryland, see Location Map - Attachment A and Site Map with directions - Attachment B, Latitude: 39° 37' 5" N, Longitude: 75° 51' 43" W (Triumph Explosives main plant in Elkton - parcel west of Blue Ball Road); Latitude: 39° 37' 4" N, Longitude: 75° 50' 47" W (Triumph Explosives main plant in Elkton - parcel east of Blue Ball Road); EPA Region III, 1st Congressional District of Maryland.

PROPERTY HISTORY: This addended Property Survey Summary Sheet (PSSS) is part of Addendum No. 1 to the initial Inventory Project Report (INPR) with FDE signed 8 August 1991. This addended PSSS clarifies the boundary of the FUDS property and discusses the presence of DERP-FUDS hazards.

The eligible property associated with the former Triumph Explosives Inc. (TEI) consists of two non-contiguous parcels containing approximately 946.49 acres fee, located in Elkton, Maryland, along the east side (71.79 acres fee) and west side (874.7 acres fee) of Blue Ball Road (near the intersection of Blue Ball Road and Route 279). Additional parcels identified as being associated with the former TEI were determined to be ineligible. Those ineligible parcels acquired by TEI included:

- 96.59 acres (93.96 fee, 2.63 lease) located about 20 miles away, along the Northeast River and the Chesapeake Bay and known as the Proving Grounds at Carpenters Point in Perryville, Maryland - this area contained Department of Defense (DOD) owned structures but the DOD did not own, lease, or possess the property,
- an easement of undetermined acreage (acquired for use of a waterline to supply the water to the property) - the location of this property could not be identified,
- 219.7 acres lease (mentioned in a 1945 business report prepared by TEI and described as being near the Elkton facilities) - the location of this parcel could not be identified.

The DOD possessed and operated a portion of the property and had interest in portions of the property at various times and through various means as described below. None of the land at this site was acquired by DOD in a purchase or lease transaction. Specifically, DOD possessed and had jurisdiction over approximately 946.49 acres for four months under authority of an Executive Order, making it FUDS-eligible. The DOD also owned buildings and had jurisdiction over the buildings and the land underlying the buildings for approximately five years under the terms of two Emergency Plant Facilities or Supply Contracts. The DOD's interest in the buildings was expressly not a realty interest, and DOD had no real property interest in the TEI land underlying the buildings; therefore, FUDS eligibility was not created by these contracts. The acreage covered by the contracted facilities became FUDS-

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eligible because of the Executive Order. The following paragraphs describe these situations in detail.

Triumph Fireworks and Fusee Company (Triumph), a privately owned manufacturing facility located in Elkton, Maryland, was formed in 1933 to produce fireworks. Triumph originally occupied about 5 acres, located on the east side of Blue Ball Road near its intersection with Route 279. Between 1934 and 1942, Triumph increased its acreage on the east side to 71.79 acres, as follows:

- 5.16 acres fee on 24 August 1933 (Deed Book S.R.A. 19/Page 436);
- 5 acres fee on 17 December 1934 (Deed Book S.R.A. 24/Page 253);
- 5.93 acres fee (excluding 0.77 acres) on 23 December 1941 (Deed Book W.E.B. 23/Page 174);
- 55.7 acres fee for the Elk Mills Loading Corporation on 18 June 1942 (Deed Book W.E.B. 27/Page 1).

In 1935, Triumph entered into a contract with the Navy for the loading and production of fuses and "floatlights." In 1938, Triumph entered into a contract with the Army for the loading/manufacturing of various types of aircraft signals. The company subsequently changed its name to Triumph Explosives Incorporated (TEI). In the early phases of European hostilities associated with World War II (circa 1939/40), TEI began producing/manufacturing ordnance under contract to various foreign governments. TEI manufactured flares and "star signals," and loaded/produced 81-mm mortar shells for Finland; manufactured pentolite for Great Britain; manufactured airplane flares for France; and loaded/produced tank mines for the Netherlands. As time went on TEI's production on these 71.79 acres (called the "Army side") was mainly for the United States Government, primarily under contracts with the Army. TEI used 16.02 acres, and its subsidiary, Elk Mills Loading Corporation, used the remaining 55.7 acres. TEI's DOD-contracted operations on the Army side included:

- TNT melting and loading;
- the manufacturing/blending of incendiary/flare mixtures, tracer mixtures, and pentolite;
- the manufacturing of fuzes and primers (for grenades and 20mm antiaircraft ammunition);
- the production/assembly of M23 Photo-Flash Bombs, hand grenade and igniting fuses, M39 and M42 aircraft signals and landing flares, ground signals, incendiary hand grenades, M-54 and M-50 incendiary bombs, smoke pots, starter cartridges, flame throwers, safe destroyers and incendiary bombs; and
- the loading, packing, and assembly of anti-tank mines.

At the same time as it was acquiring property on the Army side, TEI was also acquiring property on the west side of Blue Ball Road near its intersection with Route 279 (874.7 acres - called the "Navy side" because of its association with the Navy contracts), as well as property along the Northeast River and the Chesapeake Bay at Carpenters Point in Perryville, Maryland (96.59 acres - referred to as the Carpenters Point Proving Range).

The property associated with the Navy side was acquired as follows:

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owned land, to be used in the manufacture of ordnance materials. The buildings were to be "located on, or attached to, or used in connection with" 182.2 acres fee of TEI-owned land. The acreage was listed as two separate parcels owned by TEI: one parcel totaling 168.8 acres fee (Deed Book W.E.B. 25/Page 266), plus a second parcel totaling 13.4 acres fee (part of the 108.48-acre parcel transferred in Deed Book W.E.B. 16/Page 393), both on the Navy side. TEI was to construct the 177 buildings, but title to the buildings was to remain with the Navy. TEI could not sell the land on which the facilities were constructed until a settlement with the U.S. had been reached (i.e., either TEI purchased the buildings or the buildings were sold and removed). The Government had an option to purchase the land described in the contract if the contractor did not purchase or lease the facilities.

On 12 October 1942, the Secretary of the Navy was directed under Executive Order No. 9254 "immediately to take possession of and operate all of the plants of Triumph Explosives, Inc. located at Elkton, Maryland." The order went on to further authorize "the Secretary of the Navy, if and when he may deem it necessary and desirable for the effectuation of the purposes of the Order, to take possession of and operate any or all of the plants of the firms and corporations affiliated with Triumph Explosives, Inc., namely, the plants of Elk Loading Mills Corporation [sic] located at Elkton, Maryland; of Kent Defense Company located at Chestertown, Maryland; of Milford Ordnance Company, Inc. located at Milford, Delaware; of Sussex Ordnance Company located at Milford, Delaware; and of Maryland Display and Fireworks Company located at Elkton, Maryland...."

Government documents indicate that on 13 October 1942, the Navy took possession of and operated the Triumph plants in Elkton, Maryland, as well the affiliated plants of Milford Ordnance Company and Sussex Ordnance Company, both in Milford, Delaware (the Milford Ordnance Company and Sussex Ordnance Company sites are addressed under DERP-FUDS property number C03DE0918). The Navy took possession of TEI's entire operation in Elkton, Maryland (946.49 acres which would have encompassed both the Navy side [including Zeitler Farm] and the Army side [where Elk Mills Loading Corporation's plant was located]). Because the Proving Grounds at Carpenters Point was not located in "Elkton, Maryland" and it did not become a part of the TEI plant until March 1943, it was not included in the takeover. Contemporaneous newspaper articles state that the Navy seized TEI and all of its subsidiary and affiliated plants in Maryland and Delaware, but no governmental documents were located to indicate that the Navy took possession of either the Maryland Display and Fireworks Company in Elkton, or the Kent Defense Company in Chestertown, Maryland.

As of October 1942, TEI's operations on the Navy side included TNT pelleting and loading; the manufacturing/blending of incendiary/flare mixtures, tracer mixtures, sodium and lead azide; the manufacturing of fuzes and primers (for grenades and antiaircraft ammunition); as well as the production/assembly of 81mm, 40mm, and 20mm fixed anti-aircraft ammunition. TEI's operations on the Army side included TNT melting and loading, the manufacturing/blending of incendiary/flare mixtures, tracer mixtures, and pentolite; the manufacturing of fuzes and primers (for grenades and antiaircraft ammunition); the production/assembly of 81mm fixed anti-aircraft ammunition, M23 Photo-Flash Bombs, hand grenade fuses, M39 and M42 aircraft signals and landing flares, igniting fuses, flame throwers, and incendiary bombs; as well as the loading, packing, and assembly of anti-tank mines, all for DOD. There is no evidence

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that the Government modified any operational procedures or policies during its period of possession.

The Navy relinquished possession of the TEI facilities in Elkton to TEI as of midnight on 28 February 1943 pursuant to Executive Order No. 9306. Possession under the order had lasted for approximately 4 months (extending from 13 October 1942 through 28 February 1943).

On 29 March 1943, Contract No. NOrd(F)1087 was amended to account for additional real estate and to change the value of the contract. Appendix A of the amendment increased the description of real property underlying the facilities by 96.59 acres (93.96 acres purchase and 2.63 acres lease) to include the land in Perryville, Maryland. This area, known as the Carpenters Point Proving Range, was used by TEI as a testing range for the 40mm fixed anti-aircraft ammunition produced under Contract No. NOrd(F)1087. According to TEI newsletters, this area was also used by the Navy for the testing of 20mm anti-aircraft ammunition produced by other contractors. Under the terms of the contract, ten government-owned structures were constructed at the TEI Carpenters Point Facility. Those structures included a gun emplacement, target butt, target safety chamber, jumble jolt, drop test tower, two guard boxes, office and change house with septic tank, warehouse, tool house, a guard office and a waterline extending out to the Chesapeake Bay. The total acreage designated for construction of Naval facilities under Contract No. NOrd(F)1087 had increased to 278.79 acres as of March 1943. An undated historical business report prepared by TEI (circa 1945) stated that the property of the Carpenters Point Proving Range was leased to the Navy and that the Navy paid a nominal rent for the Carpenters Point property. However, based on a review of files in the Cecil County Deed Office and other the historical files and TEI newsletters, no specific documentation was found, however, to support the existence or scope of a lease between the Navy and TEI for the Carpenters Point property.

On 16 November 1943 (recorded 12 April 1944), Contract No. NOrd(F)1087 was amended to account for additional real estate and to change the value of the contract. Appendix A of the amendment increased the description of the real property underlying the facilities by 71.22 acres fee. The added property consisted of portions of two separate parcels: one parcel totaling 60.72 acres fee (TEI acquisition in Deed Book W.E.B. 25/Page 348), plus a second parcel totaling 10.5 acres fee (part of the 80.98-acre parcel transferred to TEI and referenced in Deed Book W.E.B. 16/Page 393), both parcels located on the Navy side. Therefore, the total acreage covered by the Naval facilities under contract No. NOrd(F)1087 was increased to 350.01 acres. The contract amendment reiterated that the Government had an option to purchase the land described in the contract if the contractor did not purchase or lease the facilities.

As of 16 November 1943, the total acreage covered by Navy-financed improvements as part of Contract Nos. NOrd(F)1087 and NOrd-2002 (including the amendments) was approximately 585.81 acres. This acreage included the 489.22 acres on the west side of Blue Ball Road and the 96.59 acres at Carpenters Point (this 96.59 acres was not part of the property possessed by the Navy under the Executive Order). The northern 328.4-acre parcel which was part of the "Zeitler Stock and Dairy Farm" was not included in either of the aforementioned contracts.

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Although the two contracts called for 427 buildings to be constructed, the construction completion report (circa 1945) associated with Contract No. NOrd(F)1087, shows that over 500 buildings and other structures were constructed on the Navy side and at the Carpenters Point Proving Range between 1941 and 1945. The facilities constructed under the contracts on the Navy side included ordnance storage magazines, ammunition production buildings (divided into areas referred to as the tracer area, sodium and lead azide area, TNT loading area, powder area, percussion elements, and final rounds assembly), warehouses, and loading docks, as well as administration buildings; and on the Carpenters Point property, a gun emplacement, target butt, target safety chamber, jumble jolt, drop test tower, two guard boxes, office and change house with septic tank, warehouse, tool house, a guard office and a waterline extending out to the Chesapeake Bay.

In 1945, TEI changed its name to Triumph Industries, Inc., and on 8 April 1946, the Navy and Triumph Industries entered into an agreement for the sale of the government facilities located on Triumph Industries lands. Under the agreement (Deed Book R.R.C. 16, Page 365), the facilities paid for by DOD under Contract Nos. NOrd(F)1087 and NOrd-2002 and used by Triumph Industries, which were deemed no longer necessary for the purpose of national defense, were sold, assigned, and transferred to Triumph Industries, Inc. for the price of \$40,000.

The 71.79 acres associated with the Army or east side were disposed of by Triumph Industries through the following deed:

- Deed Book R.R.C. 17/Page 55 - By deed dated June 1946, approximately 71.79 acres fee and an easement for a water line, were conveyed to Bowers Battery and Spark Plug Company. This area is currently owned by the Dwyer family and referred to as the Dwyer Property.

The 874.7 acres fee associated with the Navy or west side were disposed of by Triumph Industries through the following deeds:

- Deed Book R.R.C. 17/Page 62 - By deed dated 31 May 1946, approximately 328.4 acres fee, the parcel known as the "Zeitler Stock and Dairy Farm" was conveyed unto Argus F. Robinson and Laura S. Robinson).
- Deed Book W.E.B. 27/Page 522 - By deed dated 28 April 1943, approximately 9.94 acres were conveyed unto National Magnesium Corporation of Maryland. This property was part of a tract known as the "Bradley Farm" which was conveyed unto Triumph by deed from Carrie W. Davis and A. Victor Davis (Deed Book W.E.B. 16, Page 393).
- Deed Book R.R.C. 17/Page 45 - By deed dated 1 June 1946, approximately 536.36 acres were conveyed unto James E. Lewis, Samuel A. Sturgeon, J. Leroy Trone, Lorenzo M. Alagia, C. Albert Ringgold, and Robert J. Anders, Co-Partners trading as "The Elkton Company".

The 96.59 acres at Carpenters Point associated with the Proving Range were disposed of by Triumph Industries through the following deeds:

- Deed Book R.R.C. 17/36 - By deed dated 7 June 1946, Tract 1 - approximately 93 acres were transferred to Robert J. Andrews and Eldreda H. Andrews; Thomas H. Sherman and Lilliam C. Sherman; C. Albert Ringgold and Gladys W. Ringgold;
- Deed Book R.R.C. 17/38 - By deed dated 7 June 1946, Tract 2 - approximately 0.96 acres were transferred to Robert J. Andrews and

PROPERTY SURVEY SUMMARY SHEET (Continued)
TRIUMPH EXPLOSIVES INCORPORATED
FUDS PROPERTY NUMBER C03MD1012

Eldreda H. Andrews; Thomas H. Sherman and Lilliam C. Sherman; C. Albert Ringgold and Gladys W. Ringgold;

- Deed Book W.E.B. 257/501 - Tract 3 - Approximately 0.98 acres leased to Triumph by Elsie K. Day, according to terms of the lease, the lease expired 6 months after the end of the World War II (assumed to be 6 months after 9/2/45 on 3/2/46);
- Not recorded in the land records - Tract 4 - Approximately 1.1 acres leased to Triumph by Thomas H. Settle, according to the terms of the lease the lease expired 6 months after the end of the World War II (assumed to be 6 months after 9/2/45 on 3/2/46);
- Not recorded in the land records - Tract 5 - Approximately 0.55 acres leased to Triumph by Lottie A. Settle, according to the terms of the lease the lease expired 6 months after the end of the World War II (assumed to be 6 months after 9/2/45 on 3/2/46).

The 946.49 acres associated with the Elkton facility (i.e., the Army side and Navy side) are currently owned by over 20 different owners, including Morton Thiokol, MARVA Limited Partnership, General Electric Capital Railcar Services Corporation, Jim Waters, and others.

PROPERTY VISIT: On 28 May 2004, Mr. Mike O'Neill and Mr. Courtney Lowe of EA Engineering, Science, and Technology, Inc., (EA) under contract to the U.S. Army Corps of Engineers (USACE), Baltimore District, conducted a site visit of the "firehole" area of the former TEI operation. Mr. O'Neill and Mr. Lowe were accompanied by Mr. Alex Cox (Maryland Department of the Environment [MDE]), Mr. George Follett (USACE), and Mr. John Wilken Jr. (USACE) during the site visit. On 27 August 2004, Mr. O'Neill and Mr. Lowe conducted a site visit of the former Carpenters Point testing area of TEI. Mr. O'Neill and Mr. Lowe were accompanied by Mr. John Fairbank (MDE), Ms. Maria de la Torre (USACE), Ms. Vaselike Karanikolis (USACE) and Mr. Tim Holland (USACE) during the site visit. EA met with Ms. Sherry Workman the representative of Riverside Recreational Resort.

CATEGORY OF HAZARD(S): MMRP hazards were observed in the northern portion of the Navy side (identified as a "firehole" area) that may have been associated with the periods of DOD ownership/possession of and jurisdiction over the Elkton site. Based on the site visit, interviews with individuals familiar with the subject property, and a review of available information, there is no basis found to support proposal of a BD/DR, CON/HTRW, HTRW, or MMRP project at the Elkton site. A PRP/HTRW project is currently authorized and ongoing for the eligible portion of the site.

PROJECT DESCRIPTION:

a. PRP/HTRW. No additional project is proposed. By letter dated 18 August 1989, MDE named the Department of the Navy as a PRP for contamination associated with the operation of the former TEI facilities (currently Morton Thiokol). A PRP/HTRW project was approved under the original INPR to address issues related to the contractor operations at the TEI Elkton site.

b. PRP/MMRP. A PRP/MMRP project is recommended for the TEI Elkton site. The property was used by TEI's predecessor to produce fireworks, and then by TEI to manufacture ordnance for foreign governments prior to the period of DOD ownership/possession and jurisdiction. TEI manufactured flares and "star

PROPERTY SURVEY SUMMARY SHEET (Continued)
TRUIMPH EXPLOSIVES INCORPORATED
FUDS PROPERTY NUMBER C03MD1012

signals," and loaded/produced 81-mm mortar shells for the Government of Finland, manufactured pentolite for Great Britain, and airplane flares for the French Government; and loaded/produced tank mines for the government of the Netherlands. Beginning around 1941, and except for a brief four-month period, TEI operated the Navy side for about five years as a government-owned, contractor-operated facility. TEI's operations on the Navy side included TNT pelleting and loading; the manufacturing/blending of incendiary/flare mixtures, tracer mixtures, sodium and lead azide; the manufacturing of fuzes and primers (for grenades and antiaircraft ammunition); as well as the production/assembly of 81mm, 40mm, and 20mm fixed anti-aircraft ammunition. TEI's DOD-contracted operations on the Army side included: TNT melting and loading; the manufacturing/blending of incendiary/flare mixtures, tracer mixtures, and pentolite; the manufacturing of fuzes and primers (for grenades and 20mm antiaircraft ammunition); the production/assembly of M23 Photo-Flash Bombs, hand grenade and igniting fuses, M39 and M42 aircraft signals and landing flares, ground signals, incendiary hand grenades, M-54 and M-50 incendiary bombs, smoke pots, starter cartridges, flame throwers, safe destroyers and incendiary bombs; as well as the loading, packing, and assembly of anti-tank mines. During the 28 May 2004 site visit to the "firehole," unmarked suspect nose fuzes, base fuzes, flares, and other potential military munitions (MM) and munitions and explosives of concern (MEC) were observed. The presence of MM/MEC associated with contractor operations at the Elkton Facility represents a potential hazard for which DOD may bear potential CERCLA liability, along with other parties.

AVAILABLE STUDIES AND REPORTS: (available in CENAB-EN-HN files)

- Various deeds copied from the Cecil County Courthouse
- Various historical documents copied from the Elkton Historical Society
- Aerial photograph review prepared by the Environmental Protection agency (EPA)
- Various historical documents copied from the National Archives

POINT OF CONTACT: Jack Butler, CENAB-PP-E, (410) 962-4937.

LEAD REGULATOR: John Fairbank, Maryland Department of the Environment (MDE), (410) 537-3475.

Worksheet B-3. Inventory Project Report (INPR) Checklist
(Use space at bottom of this worksheet for continuation)

Checklist Preparer:		Date: August 2006	
Name: Jack Butler		Title: Project Manager	
District: Baltimore		Phone Number: (410) 962-4937	
Email address: jack.butler@usace.army.mil			
Property information:			
Property Name: Triumph Explosives Incorporated - see comments section for details			
Previous Names, if any: Triumph Industries, and the Elk Mills Loading Corporation			
Former Service: Army and Navy			
Property Location (Section, Township, Range): Elkton, Maryland (MD)			
Street: See comments section			
City: Elkton	County: Cecil	State: MD	
Latitude (D/M/S): see comments		Longitude (D/M/S): see comments	
Primary Property Owner Information (address multiple owners in Comments) :			
Name: Various owners -- Major owners lists in comments section.			
Address (if other than above):			
Street:			
City:			
Phone Number:		County:	State:

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shaded boxes checked:

Yes	No	NA
-----	----	----

Property Document Search:			
Were the following records available and used in the preparation of the INPR?			
1	Archive records	X	
2	Site maps, including facility as-built drawings	X	
3	Aerial or ground photographs	X	
4	Prior studies, documents, reports, property contamination records, or public/private sampling data	X	
5	Compliance orders issued to current or past owners/operators		X
6	Real estate records, deeds, or property transfer records	X	
7	Local historical societies and public libraries	X	
8	EPA/State environmental records or reports	X	
9	EOD incident reports		X
10	Other documentation	X	
Property Visit:			
Indicate whether the following have been contacted and interviewed to obtain information.			
11	Current landowner(s)	X	
12	Neighbors	X	

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shaded boxes checked:

	Yes	2	NA
13 Previous landowner(s)		X	
14 Prior employee(s)	X		
15 Federal agencies, including regulatory agencies	X		
16 State agencies, including regulatory agencies	X		
17 Local agencies, including regulatory and law enforcement agencies	X		
18 Other available sources	X		
19 Was access to the property possible (right of entry provided by landowner)?	X		
20 Was the property physically visited?	X		
21 Was access sufficient to allow for a thorough property inspection?	X		
22 Was access sufficient to identify potential hazards?	X		
23 Did regulatory agencies accompany USACE on the property visit?	X		
24 Did the landowner accompany USACE on the property visit?		X	
25 Was there evidence of a release of hazardous material or use/disposal of military munitions during DoD control?	X		
26 Was there evidence of a release of potential DoD hazardous material into a public or private drinking water supply? ¹		X	
27 Is there evidence of a release into a public or private drinking water supply due to deterioration of the system through ordinary use? ²		X	
28 Is there evidence of a release from products that are part of the structure of, and result in exposure within, residential buildings or businesses or community structures? ²		X	
29 Is some other program actively involved with the property (i.e., another Federal, state, or tribal program)?	X		
30 Is there evidence that activities by non-DoD parties at the property may be the source of potential contamination?	X		
31 Was information on hazards found at similar types of FUDS properties considered in identifying potential hazards at this property?	X		
32 Were site maps compared to actual conditions during the site visit?	X		
33 Were photographs taken?	X		
34 Were property owners advised to contact USACE if evidence of potential hazards is found later?	X		
35 Was a trip report of the property visit prepared?	X		
Property Eligibility Determination (refer to Chapter 3):			
36 Is the property Categorically Excluded?		X	
37 Are there release, hold harmless, "as-is", or indemnification clauses in deeds or property transfer documents that limit DoD liability?		X	
38 Is there evidence of this property being a Third Party Site?		X	

¹ This can be determined by reviewing public water supply sampling data. Provide discussion of how it was determined to be release due to DoD activities rather than by current or past owners/operators.

² This question is from the EPA Pre-CERCLIS Screening Assessment Checklist/Decision Form, EPA-540-F-98-039 "Improving Site Assessment: Pre-CERCLIS Screening Assessments."

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shaded boxes checked:

	Yes	2	3
39 Is the property eligible under FUDS?	X		
40 If necessary, has a " <i>Categorical Exclusion or Ineligible Property</i> " worksheet been prepared (Worksheet B-1)			X
FUDS Property Screening:			
41 Was a CERCLA Preliminary Assessment completed?	X		
42 Was a MMRP/MEC RAC Worksheet prepared for the property?	X		
Project Eligibility Determination (refer to Chapter 3):			
43 Have all typical hazards been investigated for possible occurrence at this type of property?	X		
44 Were hazards identified?	X		
45 Are identified hazards of DoD Origin?		X	
46 If identified hazards were of non-DoD origin, has the lead regulatory agency been informed? (Provide name, phone number, date)	X		
47 Is the current owner under a RCRA or CERCLA clean-up order?	X		
48 Has the "right of first refusal" been exercised by an adjacent DoD installation?			X
49 Is there evidence of beneficial use?	X		
50 Are there other policy considerations against recommending a project?		X	
51 Are eligible FUDS projects recommended? (If yes, identify projects below)	X		
INPR Preparation and Review:			
52 Is the INPR prepared consistent with INPR Content Matrix (Table B-2)?	X		
53 Is the INPR Property Survey Summary Sheet consistent with Table B-3?	X		
54 Is the Project Summary Sheet(s) consistent with Table B-4?	X		
55 If appropriate, has a " <i>BD/DR Project Summary Sheet Checklist</i> " been prepared? (See Worksheet B-2)			X
56 If the INPR recommends a PRP/HTRW project, has the PRP District reviewed the INPR? (See Figure B-1)			X
57 If the INPR recommends a PRP/HTRW project, has the HTRW Center of Expertise reviewed the INPR? (See Figure B-1)			X
58 If the INPR recommends a MMRP or PRP/MMRP project, has the MM Center of Expertise reviewed the INPR? (See Figure B-1)	*		
59 Was the draft INPR coordinated with Office of Counsel and Real Estate?	X		
60 Was the draft INPR shared with the Lead Regulatory Agency after internal USACE review?	*		

Narrative comments to explain above notations: (Key your comments to the checklist item number)

Property Name/Description/location – The property was formerly known as Triumph Industries, Inc. (TEI) and the Elk Mill Loading Corporation. It consists of two non-contiguous properties totaling 946.49 acres located in Cecil County, Maryland. The two eligible parcels are located in Elkton along the east (referred to as the “Army side”) and west side (referred to as the “Navy side”) of Blue Ball Road near the intersection of Route 279.

Triumph Explosives [Navy parcel] Latitude: 39° 37' 5" N, Longitude: 75° 51' 43" W, [Army parcel] Latitude: 39° 37' 4" N, Longitude: 75° 50' 47" W, “Firehole” Latitude: 39° 38' 00" N, Longitude: 75° 53' 00" W

9. No EOD reports were identified for the site; however, EOD may complete forms based on recent findings at Elkton site near former “firehole” on the farm owned by Marva Limited.

12 and 15. USACE and MDE provided backup information related to a 1992 PRP/HTRW study. Numerous interviewees were contacted during PRP study. Additional persons familiar with the site have also been contacted subsequent to PRP study.

20 and 22. The entire Army and Navy sides were not visited. This INPR addendum addressed MMRP issues located at the site in the area of the former “firehole” on the Navy side.

23 and 24. MDE has a right of entry and provided EA and USACE access during the Elkton “firehole” site visit.

25. Suspect MM was observed during the site visit at the Elkton site near the former “firehole” on the farmland owned by MARVA Ltd, but it is not clear whether it was placed there during the period of DOD control.

29. MDE and the EPA have been involved at the FUDS property in the “firehole” area in the northern portion of the Navy side and at nearby areas (within the FUDS) owned by Morton Thiokol and General Electric Capital Services Railcar Corporation. EPA Region III and GE Railcar are working on a RCRA corrective action. MDE has conducted several investigations at the site and EPA has been overseeing these investigations as well as supplying resources when available (e.g. EPA conducted an aerial photograph review). EPA III began an emergency response action in the “firehole” area in late 2005 to remove munitions.

30. The FUDS was contractor owned and operated except for DOD’s four-month possession period, so the contractor’s activities may be a source of the MM. The MM identified in the former “firehole” area had no markings to indicate for whom the ordnance was manufactured for (i.e., for the U.S. or for a foreign government).

41. A Preliminary Assessment has been completed by MDE and approved by EPA.

43. Not all hazards were investigated since the site has an active PRP/HTRW project ongoing and this INPR addendum was specifically directed at suspect MM observed on site.

44 and 45. MM hazards were identified at the site which appear to be related to the contractor’s operations at the site. The contractor manufactured and assembled ordnance for foreign governments and for the U.S. Army under straight supply contracts. It also manufactured and produced ordnance for the U.S. Navy under emergency plant facilities/supply contracts.

46. MDE and EPA are involved with ongoing investigations at the site and helping to determine the nature of the remaining hazard(s). MDE contact: John Fairbank, 410-537-3450. EPA III contact: Hank Sokolowski, 215-314-3348.

49. The former TEI facilities in Elkton have all been beneficially used subsequent to DOD usage, since DOD’s period of possession was in 1942-43, and TEI continued to operate after that

Narrative comments to explain above notations: (Key your comments to the checklist item number)

time. In addition, the site has been used subsequent to TEI's ownership.

58. USACE-Baltimore will forward to MM Center of Expertise for review.

60. USACE-Baltimore will forward to MDE and EPA Region III after internal review is completed.

Worksheet B-3. Inventory Project Report (INPR) Checklist
(Use space at bottom of this worksheet for continuation)

Checklist Preparer:		Date: August 2006
Name: Jack Butler		Title: Project Manager
District: Baltimore	Phone Number: (410) 962-4937	
Email address: jack.butler@usace.army.mil		
Property information:		
Property Name: Triumph Explosives Incorporated - see comments section for details		
Previous Names, if any: Triumph Industries, and the Elk Mills Loading Corporation		
Former Service: Army and Navy		
Property Location (Section, Township, Range): Elkton, Maryland (MD)		
Street: See comments section		
City: Elkton	County: Cecil	State: MD
Latitude (D/M/S): see comments	Longitude (D/M/S): see comments	
Primary Property Owner Information (address multiple owners in Comments) :		
Name: Various owners – Major owners lists in comments section.		
Address (if other than above):		
Street:		
City:		
Phone Number:	County:	State:

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shaded boxes checked:

	Yes	No	NA
Property Document Search:			
Were the following records available and used in the preparation of the INPR?			
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9	EOD incident reports		X
10	Other documentation	X	
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Indicate whether the following have been contacted and interviewed to obtain information.			
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12	Neighbors	X	

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26 Was there evidence of a release of potential DoD hazardous material into a public or private drinking water supply? ¹		X	
27 Is there evidence of a release into a public or private drinking water supply due to deterioration of the system through ordinary use? ²		X	
28 Is there evidence of a release from products that are part of the structure of, and result in exposure within, residential buildings or businesses or community structures? ²		X	
29 Is some other program actively involved with the property (i.e., another Federal, state, or tribal program)?	X		
30 Is there evidence that activities by non-DoD parties at the property may be the source of potential contamination?	X		
31 Was information on hazards found at similar types of FUDS properties considered in identifying potential hazards at this property?	X		
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35 Was a trip report of the property visit prepared?	X		
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36 Is the property Categorically Excluded?		X	
37 Are there release, hold harmless, "as-is", or indemnification clauses in deeds or property transfer documents that limit DoD liability?		X	
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40	If necessary, has a "Categorical Exclusion or Ineligible Property" worksheet been prepared (Worksheet B-1)			X
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44	Were hazards identified?	X		
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46	If identified hazards were of non-DoD origin, has the lead regulatory agency been informed? (Provide name, phone number, date)	X		
47	Is the current owner under a RCRA or CERCLA clean-up order?	X		
48	Has the "right of first refusal" been exercised by an adjacent DoD installation?			X
49	Is there evidence of beneficial use?	X		
50	Are there other policy considerations against recommending a project?		X	
51	Are eligible FUDS projects recommended? (If yes, identify projects below)	X		
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53	Is the INPR Property Survey Summary Sheet consistent with Table B-3?	X		
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55	If appropriate, has a "BD/DR Project Summary Sheet Checklist" been prepared? (See Worksheet B-2)			X
56	If the INPR recommends a PRP/HTRW project, has the PRP District reviewed the INPR? (See Figure B-1)			X
57	If the INPR recommends a PRP/HTRW project, has the HTRW Center of Expertise reviewed the INPR? (See Figure B-1)			X
58	If the INPR recommends a MMRP or PRP/MMRP project, has the MM Center of Expertise reviewed the INPR? (See Figure B-1)	*		
59	Was the draft INPR coordinated with Office of Counsel and Real Estate?	X		
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Triumph Explosives [Navy parcel] Latitude: 39° 37' 5" N, Longitude: 75° 51' 43" W, [Army parcel] Latitude: 39° 37' 4" N, Longitude: 75° 50' 47" W, “Firehole” Latitude: 39° 38' 00" N, Longitude: 75° 53' 00" W

9. No EOD reports were identified for the site; however, EOD may complete forms based on recent findings at Elkton site near former “firehole” on the farm owned by Marva Limited.

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23 and 24. MDE has a right of entry and provided EA and USACE access during the Elkton “firehole” site visit.

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44 and 45. MM hazards were identified at the site which appear to be related to the contractor’s operations at the site. The contractor manufactured and assembled ordnance for foreign governments and for the U.S. Army under straight supply contracts. It also manufactured and produced ordnance for the U.S. Navy under emergency plant facilities/supply contracts.

46. MDE and EPA are involved with ongoing investigations at the site and helping to determine the nature of the remaining hazard(s). MDE contact: John Fairbank, 410-537-3450. EPA III contact: Hank Sokolowski, 215-314-3348.

49. The former TEI facilities in Elkton have all been beneficially used subsequent to DOD usage, since DOD’s period of possession was in 1942-43, and TEI continued to operate after that

Narrative comments to explain above notations: (Key your comments to the checklist item number)

time. In addition, the site has been used subsequent to TEI's ownership.

58. USACE-Baltimore will forward to MM Center of Expertise for review.

60. USACE-Baltimore will forward to MDE and EPA Region III after internal review is completed.

Table 1
EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with all munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions*, *small arms*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	<ul style="list-style-type: none"> All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard. 	30
High explosive (used or damaged)	<ul style="list-style-type: none"> All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: <ul style="list-style-type: none"> Been damaged by burning or detonation Deteriorated to the point of instability. 	25
Pyrotechnic (used or damaged)	<ul style="list-style-type: none"> All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: <ul style="list-style-type: none"> Been damaged by burning or detonation Deteriorated to the point of instability. 	20
High explosive (unused)	<ul style="list-style-type: none"> All DMM containing a high explosive filler that: <ul style="list-style-type: none"> Have not been damaged by burning or detonation Are not deteriorated to the point of instability. 	15
Propellant	<ul style="list-style-type: none"> All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: <ul style="list-style-type: none"> Damaged by burning or detonation Deteriorated to the point of instability. 	15
Bulk secondary high explosives, pyrotechnics, or propellant	<ul style="list-style-type: none"> All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard. 	10
Pyrotechnic (not used or damaged)	<ul style="list-style-type: none"> All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: <ul style="list-style-type: none"> Have not been damaged by burning or detonation Are not deteriorated to the point of instability. 	10
Practice	<ul style="list-style-type: none"> All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: <ul style="list-style-type: none"> Been damaged by burning or detonation Deteriorated to the point of instability. 	5
Riot control	<ul style="list-style-type: none"> All UXO or DMM containing a riot control agent filler (e.g., tear gas). 	3
Small arms	<ul style="list-style-type: none"> All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.]. 	2
Evidence of no munitions	<ul style="list-style-type: none"> Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present. 	0
MUNITIONS TYPE	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	20

DIRECTIONS: Document any MRS-specific data used in selecting the *Munitions Type* classifications in the space provided.

Suspect fuses observed on the ground surface at the former location of the "firehole" site associated with the Elkton Facility.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with all sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range*, *practice munitions*, *small arms*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	♦ The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	♦ The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	♦ The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	♦ The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	♦ The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	♦ The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	♦ The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	♦ The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	♦ The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	♦ The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	♦ Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	8

DIRECTIONS: Document any MRS-specific data used in selecting the **Source of Hazard** classifications in the space provided.

Observed on the ground surface at the former location of the "firehole" site associated with the Elkton Facility.

Table 3**EHE Module: Location of Munitions Data Element Table**

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with all locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface*, *subsurface*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	<ul style="list-style-type: none"> Physical evidence indicates that there are UXO or DMM on the surface of the MRS Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS. 	25
Confirmed subsurface, active	<ul style="list-style-type: none"> Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. 	20
Confirmed subsurface, stable	<ul style="list-style-type: none"> Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. 	15
Suspected (physical evidence)	<ul style="list-style-type: none"> There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS. 	10
Suspected (historical evidence)	<ul style="list-style-type: none"> There is historical evidence indicating that UXO or DMM may be present at the MRS. 	5
Subsurface, physical constraint	<ul style="list-style-type: none"> There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM. 	2
Small arms (regardless of location)	<ul style="list-style-type: none"> The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.]. 	1
Evidence of no munitions	<ul style="list-style-type: none"> Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present. 	0
LOCATION OF MUNITIONS	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 25).	25

DIRECTIONS: Document any MRS-specific data used in selecting the *Location of Munitions* classifications in the space provided.

Observed on the ground surface at the former location of the "firehole" site associated with the Elkton Facility. Observed on Digital Geophysics maps to be subsurface as well.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive material. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	<ul style="list-style-type: none"> There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible). 	10
Barrier to MRS access is incomplete	<ul style="list-style-type: none"> There is a barrier preventing access to parts of the MRS, but not the entire MRS. 	8
Barrier to MRS access is complete but not monitored	<ul style="list-style-type: none"> There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS. 	5
Barrier to MRS access is complete and monitored	<ul style="list-style-type: none"> There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS. 	0
EASE OF ACCESS	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	10

DIRECTIONS: Document any MRS-specific data used in selecting the *Ease of Access* classification in the space provided.

The site is a farm and it is not fenced. In addition Public roads lead to the site.

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	♦ The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	♦ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	♦ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5

DIRECTIONS: Document any MRS-specific data used in selecting the *Status of Property* classification in the space provided.

Table 6**EHE Module: Population Density Data Element Table**

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	♦ There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	♦ There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">3</div>
< 100 persons per square mile	♦ There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
POPULATION DENSITY	DIRECTIONS: Record the single highest score from above in the box to the right (maximum score = 5).	3

DIRECTIONS: Document any MRS-specific data used in selecting the *Population Density* classification in the space provided.

The population per square-mile is 291 according to the 2000 U.S. Census (www.census.gov).

Table 7**EHE Module: Population Near Hazard Data Element Table**

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	♦ There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25 inhabited structures	♦ There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	♦ There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	♦ There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	♦ There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	♦ There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5

DIRECTIONS: Document any MRS-specific data used in selecting the *Population Near Hazard* classification in the space provided.

Industrial park & farm buildings are present at the Elkton site.

Table 8**EHE Module: Types of Activities/Structures Data Element Table**

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with all the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	<ul style="list-style-type: none"> Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering. 	5
Parks and recreational areas	<ul style="list-style-type: none"> Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses. 	4
Agricultural, forestry	<ul style="list-style-type: none"> Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry. 	3
Industrial or warehousing	<ul style="list-style-type: none"> Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing. 	2
No known or recurring activities	<ul style="list-style-type: none"> There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary. 	1
TYPES OF ACTIVITIES/STRUCTURES	DIRECTIONS: Record the single highest score from above in the box to the right (maximum score = 5).	5

DIRECTIONS: Document any MRS-specific data used in selecting the *Types of Activities/Structures* classifications in the space provided.

The Morton Thiokol manufacturing plant is located to the south, a farm is located to the east of the firehole at the Elkton site. Residential property is located nearby.

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	♦ There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	♦ There are ecological resources present on the MRS.	3
Cultural resources present	♦ There are cultural resources present on the MRS.	3
No ecological or cultural resources present	♦ There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	0

DIRECTIONS: Document any MRS-specific data used in selecting the *Ecological and/or Cultural Resources* classification in the space provided.

No known Ecological or Cultural resources present.

Table 10
Determining the EHE Module Rating

	Source	Score	Value	
DIRECTIONS: 1. From Tables 1–9, record the data element scores in the Score boxes to the right. 2. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right. 3. Add the three Value boxes and record this number in the EHE Module Total box below. 4. Circle the appropriate range for the EHE Module Total below. 5. Circle the EHE Module Rating that corresponds to the range selected and record this value in the EHE Module Rating box found at the bottom of the table. Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.	Explosive Hazard Factor Data Elements			
	Munitions Type	Table 1	20	28
	Source of Hazard	Table 2	8	
	Accessibility Factor Data Elements			
	Location of Munitions	Table 3	25	40
	Ease of Access	Table 4	10	
	Status of Property	Table 5	5	
	Receptor Factor Data Elements			
	Population Density	Table 6	3	13
	Population Near Hazard	Table 7	5	
	Types of Activities/ Structures	Table 8	5	
	Ecological and /or Cultural Resources	Table 9	0	
	EHE MODULE TOTAL			81
	EHE Module Total		EHE Module Rating	
	92 to 100		A	
	82 to 91		B	
	71 to 81		C	
	60 to 70		D	
	48 to 59		E	
	38 to 47		F	
less than 38		G		
Alternative Module Ratings		Evaluation Pending		
		No Longer Required		
		No Known or Suspected Explosive Hazard		
EHE MODULE RATING		C		

Table 11**CHE Module: CWM Configuration Data Element Table**

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to all CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO*, *CWM/DMM*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: <ul style="list-style-type: none"> Explosively configured CWM that are UXO (i.e., CWM/UXO). Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged. 	30
CWM mixed with UXO	<ul style="list-style-type: none"> The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO. 	25
CWM, explosive configuration that are undamaged DMM	<ul style="list-style-type: none"> The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged. 	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: <ul style="list-style-type: none"> Nonexplosively configured CWM/DMM. Bulk CWM/DMM (e.g., ton container). 	15
CAIS K941 and CAIS K942	<ul style="list-style-type: none"> The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11. 	12
CAIS (chemical agent identification sets)	<ul style="list-style-type: none"> Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS. 	10
Evidence of no CWM	<ul style="list-style-type: none"> Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS. 	0
CWM CONFIGURATION	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	

DIRECTIONS: Document any MRS-specific data used in selecting the *CWM Configuration* classifications in the space provided.

No Evidence of CWM

Table 12**CHE Module: Sources of CWM Data Element Table**

DIRECTIONS: Below are 11 sources of CWM hazards and their descriptions. Review these classifications and circle the score(s) that correspond with all the sources of CWM hazards known or suspected to be present at the MRS.

Note: The terms *CWM/UXO*, *CWM/DMM*, *surface*, *subsurface*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Live-fire involving CWM	<ul style="list-style-type: none"> The MRS is a former military range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. The MRS is a former military range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface commingled with conventional munitions that are UXO. 	10
Damaged CWM/DMM surface or subsurface	<ul style="list-style-type: none"> There are damaged CWM/DMM on the surface or in the subsurface at the MRS. 	10
Undamaged CWM/DMM surface	<ul style="list-style-type: none"> There are undamaged CWM/DMM on the surface at the MRS. 	10
CAIS/DMM surface	<ul style="list-style-type: none"> There are CAIS/DMM on the surface. 	10
Undamaged CWM/DMM, subsurface	<ul style="list-style-type: none"> There are undamaged CWM/DMM in the subsurface at the MRS. 	5
CAIS/DMM subsurface	<ul style="list-style-type: none"> There are CAIS/DMM in the subsurface at the MRS. 	5
Former CA or CWM Production Facilities	<ul style="list-style-type: none"> The MRS is a facility that formerly engaged in production of CA or CWM, and CWM/DMM is suspected of being present on the surface or in the subsurface. 	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM	<ul style="list-style-type: none"> The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface. 	3
Former Training Facility using CWM or CAIS	<ul style="list-style-type: none"> The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM or CAIS/DMM are suspected of being present on the surface or in the subsurface. 	2
Former Storage or Transfer points of CWM	<ul style="list-style-type: none"> The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM. 	1
Evidence of no CWM	<ul style="list-style-type: none"> Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS. 	0
SOURCES OF CWM	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	

DIRECTIONS: Document any MRS-specific data used in selecting the **Sources of CWM** classifications in the space provided.

Table 13**CHE Module: Location of CWM Data Element Table**

DIRECTIONS: Below are seven classifications of CWM locations and their descriptions. Review these locations and circle the score(s) that correspond with all locations where CWM are located or suspected of being found at the MRS.

Note: The terms *surface*, *subsurface*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	<ul style="list-style-type: none"> Physical evidence indicates that there are CWM on the surface of the MRS. Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS. 	25
Confirmed subsurface, active	<ul style="list-style-type: none"> Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging), at the MRS, are likely to expose CWM. Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging), at the MRS, are likely to expose CWM. 	20
Confirmed subsurface, stable	<ul style="list-style-type: none"> Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities, at the MRS, are not likely to cause CWM to be exposed. Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed. 	15
Suspected (physical evidence)	<ul style="list-style-type: none"> There is physical evidence, other than the documented presence of CWM, indicating that CWM may be present at the MRS. 	10
Suspected (historical evidence)	<ul style="list-style-type: none"> There is historical evidence indicating that CWM may be present at the MRS. 	5
Subsurface, physical constraint	<ul style="list-style-type: none"> There is physical or historical evidence indicating that CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM. 	2
Evidence of no CWM	<ul style="list-style-type: none"> Following investigation of the MRS, there is physical evidence that there is no CWM present or there is historical evidence indicating that no CWM are present. 	0
LOCATION OF CWM	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 25).	

DIRECTIONS: Document any MRS-specific data used in selecting the *Location of CWM* classifications in the space provided.

Table 14**CHE Module: Ease of Access Data Element Table**

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any CWM. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	<ul style="list-style-type: none"> There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible). 	10
Barrier to MRS access is incomplete	<ul style="list-style-type: none"> There is a barrier preventing access to parts of the MRS, but not the entire MRS. 	8
Barrier to MRS access is complete but not monitored	<ul style="list-style-type: none"> There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS. 	5
Barrier to MRS access is complete and monitored	<ul style="list-style-type: none"> There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS. 	0
EASE OF ACCESS	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	

DIRECTIONS: Document any MRS-specific data used in selecting the *Ease of Access* classification in the space provided.

Table 15

CHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	<ul style="list-style-type: none"> The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal or local governments; and land or water bodies managed by other federal agencies. 	5
Scheduled for transfer from DoD control	<ul style="list-style-type: none"> The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied. 	3
DoD control	<ul style="list-style-type: none"> The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD controls access to the property 24 hours per day, every day of the calendar year. 	0
STATUS OF PROPERTY	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the *Status of Property* classification in the space provided.

Table 16

CHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	<ul style="list-style-type: none"> There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data. 	5
100–500 persons per square mile	<ul style="list-style-type: none"> There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data. 	3
< 100 persons per square mile	<ul style="list-style-type: none"> There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data. 	1
POPULATION DENSITY	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the *Population Density* classification in the space provided.

Table 17

CHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	<ul style="list-style-type: none"> There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both. 	5
16 to 25 inhabited structures	<ul style="list-style-type: none"> There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both. 	4
11 to 15 inhabited structures	<ul style="list-style-type: none"> There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both. 	3
6 to 10 inhabited structures	<ul style="list-style-type: none"> There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both. 	2
1 to 5 inhabited structures	<ul style="list-style-type: none"> There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both. 	1
0 inhabited structures	<ul style="list-style-type: none"> There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both. 	0
POPULATION NEAR HAZARD	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the *Population Near Hazard* classification in the space provided.

Table 18**CHE Module: Types of Activities/Structures Data Element Table**

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with all the activities/structures classifications at the MRS.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	<ul style="list-style-type: none"> Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering. 	5
Parks and recreational areas	<ul style="list-style-type: none"> Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses. 	4
Agricultural, forestry	<ul style="list-style-type: none"> Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry. 	3
Industrial or warehousing	<ul style="list-style-type: none"> Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary, within the MRS's boundary, that are associated with industrial activities or warehousing. 	2
No known or recurring activities	<ul style="list-style-type: none"> There are no known of recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary. 	1
TYPES OF ACTIVITIES/STRUCTURES	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the *Types of Activities/Structures* classifications in the space provided.

Table 19

CHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classification at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	♦ There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	♦ There are ecological resources present on the MRS.	3
Cultural resources present	♦ There are cultural resources present on the MRS.	3
No ecological or cultural resources present	♦ There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the *Ecological and/or Cultural Resources* classification in the space provided.

Table 20
Determining the CHE Module Rating

	Source	Score	Value	
DIRECTIONS: 1. From Tables 11–19, record the data element scores in the Score boxes to the right. 2. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right. 3. Add the three Value boxes and record this number in the CHE Module Total box below. 4. Circle the appropriate range for the CHE Module Total below. 5. Circle the CHE Module Rating that corresponds to the range selected and record this value in the CHE Module Rating box found at the bottom of the table. Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.	CWM Hazard Factor Data Elements			
	CWM Configuration	Table 11		
	Sources of CWM	Table 12		
	Accessibility Factor Data Elements			
	Location of CWM	Table 13		
	Ease of Access	Table 14		
	Status of Property	Table 15		
	Receptor Factor Data Elements			
	Population Density	Table 16		
	Population Near Hazard	Table 17		
	Types of Activities/ Structures	Table 18		
	Ecological and /or Cultural Resources	Table 19		
	CHE MODULE TOTAL			
	CHE Module Total		CHE Module Rating	
	92 to 100		A	
	82 to 91		B	
	71 to 81		C	
	60 to 70		D	
	48 to 59		E	
	38 to 47		F	
less than 38		G		
Alternative Module Ratings	Evaluation Pending			
	No Longer Required			
	No Known or Suspected CWM Hazard			
CHE MODULE RATING		No Known or Suspected CWM Hazard		

Table 21**HHE Module: Groundwater Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		

Migratory Pathway Factor		
DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.		
Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	

Receptor Factor		
DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.		
Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	

Table 21**HHE Module: Groundwater Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
No Known or Suspected Groundwater MC Hazard			<input type="checkbox"/>

Table 22**HHE Module: Surface Water – Human Endpoint Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios	
CHF Scale	CHF Value	Sum The Ratios		
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$		
100 > CHF > 2	M (Medium)			
2 > CHF	L (Low)			
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).			
<u>Migratory Pathway Factor</u> DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.				
Classification	Description		Value	
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.		H	

Table 22**HHE Module: Surface Water – Human Endpoint Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios		
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.		M		
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).		L		
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).				
<u>Receptor Factor</u>					
DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.					
Classification	Description	Value			
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H			
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M			
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L			
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).				
No Known or Suspected Surface Water (Human Endpoint) MC Hazard			<input type="checkbox"/>		

Table 23**HHE Module: Sediment – Human Endpoint Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

Table 23**HHE Module: Sediment – Human Endpoint Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Human Endpoint) MC Hazard



Table 24**HHE Module: Surface Water – Ecological Endpoint Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios			
CHF Scale	CHF Value	Sum the Ratios				
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$				
100 > CHF > 2	M (Medium)					
2 > CHF	L (Low)					
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).					
Migratory Pathway Factor						
DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.						
Classification	Description	Value				
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H				
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M				
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L				
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).					
Receptor Factor						
DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.						
Classification	Description	Value				
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H				
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M				
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L				
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).					

Table 24**HHE Module: Surface Water – Ecological Endpoint Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard			<input type="checkbox"/>

Table 25**HHE Module: Sediment – Ecological Endpoint Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).		

<u>Migratory Pathway Factor</u>		
DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.		
Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move	M

Table 25**HHE Module: Sediment – Ecological Endpoint Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
	but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.		
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).		L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		
<u>Receptor Factor</u>			
DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.			
Classification	Description		Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.		H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.		M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.		L
RECEPTOR FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		
No Known or Suspected Sediment (Ecological Endpoint) MC Hazard			<input type="checkbox"/>

Table 26**HHE Module: Surface Soil Data Element Table****Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Soil MC Hazard



HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

[illegible]

Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: Triumph Explosives Firehole

Component: Former OB/OD area

Installation/Property Name: Triumph Explosives, Incorporated

Location (City, County, State): Elkton Maryland

Site Name (RMIS ID)/Project Name (Project No.): C03MD101202

Date Information Entered/Updated: August 2006

Point of Contact (Name/Phone): George Follett CENAB 410 -962-6743

Project Phase (check only one):

<input checked="" type="checkbox"/> PA	<input type="checkbox"/> SI	<input type="checkbox"/> RI	<input type="checkbox"/> FS	<input type="checkbox"/> RD
<input type="checkbox"/> RA-C	<input type="checkbox"/> RIP	<input type="checkbox"/> RA-O	<input type="checkbox"/> RC	<input type="checkbox"/> LTM

Media Evaluated (check all that apply):

<input type="checkbox"/> Groundwater	<input type="checkbox"/> Sediment (human receptor)
<input type="checkbox"/> Surface soil	<input type="checkbox"/> Surface Water (ecological receptor)
<input type="checkbox"/> Sediment (ecological receptor)	<input type="checkbox"/> Surface Water (human receptor)

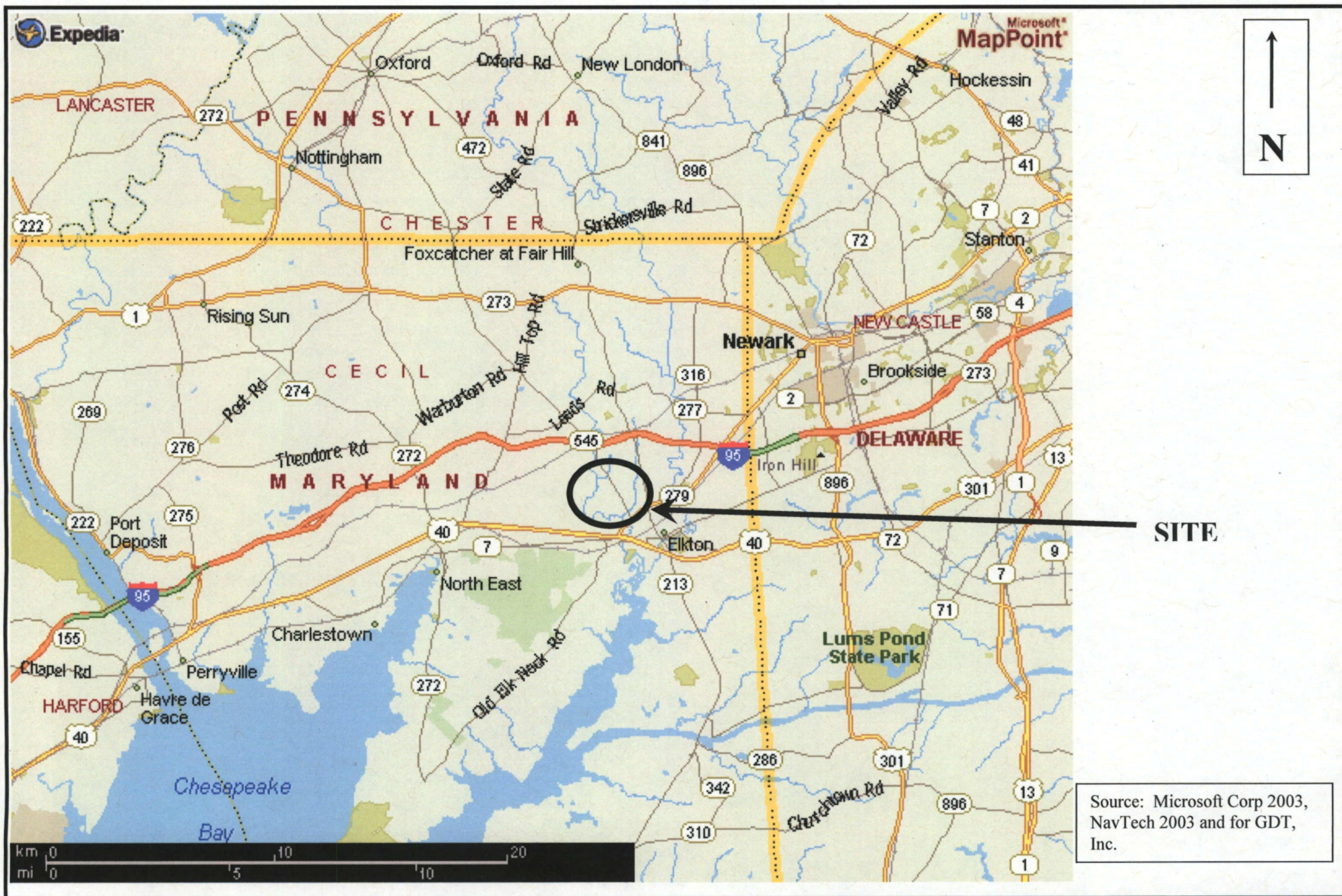
MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present): Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of PRP/MMRP projects and the process to be followed for execution of project response actions. A walkover survey was conducted in the suspected area of the former "firehole" on 28 May 2004 as part of the INPR addendum preparation. Numerous suspect military munitions and munitions and explosives of concern (MM/MEC) related items were observed during the site visit.

Description of Pathways for Human and Ecological Receptors: MEC in surface and subsurface soil

Description of Receptors (Human and Ecological): Potential human and ecological receptors, human more likely to interact with MEC.

TRIUMPH EXPLOSIVES INCORPORATED
PROPERTY NUMBER CO3MD1012



See Site Map Attachment B.



**ATTACHMENT C
PHOTOLOG
SITE PHOTOGRAPHS
TRIUMPH EXPLOSIVES INCORPORATED
FUDS PROPERTY NUMBER C03MD1012**



Photo 1: View of the northern boundary of the former firehole. Zeitler Road is beyond the plowed field.



Photo 2: Additional view of the northern boundary of the former firehole. Zeitler Road is beyond the plowed field.



Photo 3: Panoramic View (1 of 2) Firehole Area from the north along Zeitler Road looking southwest.



Photo 4: Panoramic View (2 of 2) Firehole Area from the north along Zeitler Road looking south.



Photo 5: Panoramic View of the rest of the Herron Farm from the north along Zeitler Road looking south/southeast.



Photo 6: Panoramic View of the rest of the Herron Farm from the north along Zeitler Road looking south/southeast.